ORDER NO. RD83022063C2

Service Manual

Radio

RF-7D

Ultra-Compact FM/AM Radio

■ SPECIFICATIONS

Frequency Range:	FM 87.5~108 MHz AM 520~1610 kHz (577~186 m)	Power Output:	240 mW (RMS Max)
Intermediate Frequency:	FM 10.7 MHz AM 455 kHz	Speaker:	4 cm ($1\frac{1}{2}$") PM Dynamic Speaker
Sensitivity:	FM 6.3μV for 50 mW Output AM 126μV/m for 50 mW Output	Dimensions:	53.5 (Wide)×65.8 (High)×20.7 (Deep) mm ($2\frac{1}{8}$"×$2\frac{19}{32}$"×$\frac{27}{32}$")
Battery:	3 V (Two "AAA" size Penlight Batteries) (National UM-4 or equivalent)	Weight:	80 g (2.82 oz) with batteries
		Impedance:	Speaker ..... 6Ω Earphone Jack 32Ω

Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

DISASSEMBLY INSTRUCTIONS

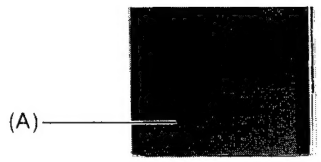


Fig. 1

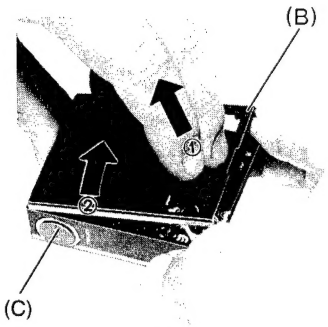


Fig. 2

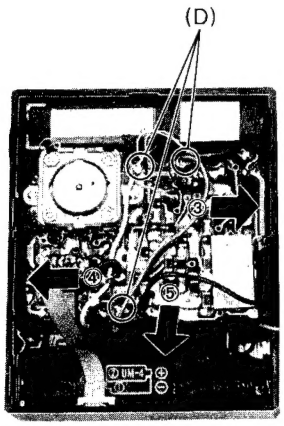


Fig. 3

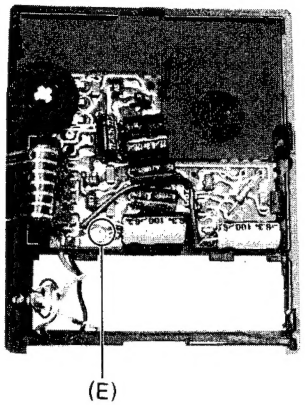


Fig. 4

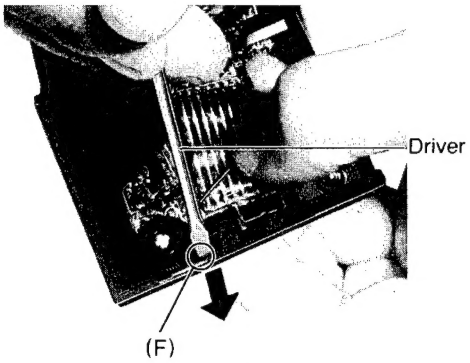


Fig. 5

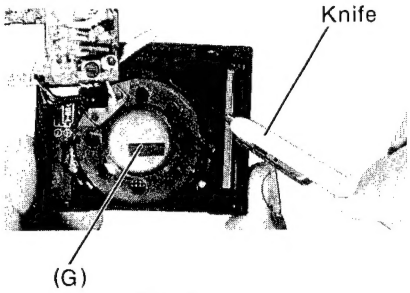


Fig. 6

Procedure	To remove—.	Remove	Shown in Fig.—.
1	Rear cabinet ass'y.	Battery cover ..... (A)×1	1
2		Remove the rear cabinet ass'y in the direction of arrow ① and ② ..... (B)×1	2
3	Circuit board.	Knob ..... (C)×1	2
4		Unsolder ..... (D)×3	3
5		Push the front cabinet ass'y in the direction of arrow ③, ④ and Remove the catch.	3
6		Remove the circuit board in the direction of arrow ⑤.	3
7	AF circuit board.	Screw (2×2) ..... (E)×1	4
8		Remove the catch in the direction of arrow ..... (F)×1 then remove the AF circuit board.	5
9	Speaker.	Remove the adhesion as shown in fig. 6. ..... (G)×1	6

MEASUREMENTS AND ADJUSTMENTS

Notes:
1. Set volume control to maximum.
2. Set band selector switch to AM or FM.
3. Set power switch to ON.
4. Set power source voltage to 3 volts DC.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING (DISTANCE)	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
	AM-IF ALIGNMENT					
(1)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T2 (IFT)	Adjust for maximum output.
	AM-RF ALIGNMENT					
(2)	〃	511 kHz	Tuning capacitor fully closed.	〃	L6 (OSC Coil)	〃
(3)	〃	1650 kHz	Tuning capacitor fully open.	〃	CT4 (OSC Trimmer)	〃
(4)	〃	550 kHz	Tune to signal.	〃	(＊1) L5 (ANT Coil)	Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(5)	〃	1500 kHz	Tune to signal.	〃	CT3 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2)～(5).
	(＊1) Cement antenna bobbin with wax after completing alignment.					
	FM-IF ALIGNMENT					
(6)	High side thru. 0.001μF to point ▼F Negative side to point ▼E .	10.7 MHz (SWP.)	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point ▼F Negative side to point ▼E .	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 7).
(7)	〃	〃	〃	〃	T3 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 8).
	FM-RF ALIGNMENT					
(8)	Connect point ▼T through FM dummy antenna Negative side to point ▼E .	87.5 MHz	Tuning capacitor fully closed.	Output meter across voice coil.	L4 (OSC Coil)	(＊2) Adjust for maximum output.
(9)	〃	108 MHz	Tuning capacitor fully open.	〃	CT2 (OSC Trimmer)	〃
(10)	〃	90 MHz	Tune to signal.	〃	L3 (ANT Coil)	〃
(11)	〃	106 MHz	Tune to signal.	〃	CT1 (ANT Trimmer)	(＊2) Adjust for maximum output. Repeat steps (8)～(11).
(12)	〃	108 MHz	Tuning Capacitor fully open	〃	CT5 (OSC Trimmer)	Adjust for maximum output before assembling the front cabinet.
	(＊2) Three output responses will be present; proper tuning is the center frequency.					

■ ALIGNMENT POINTS

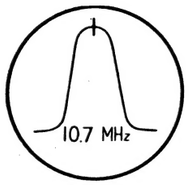


Fig. 7

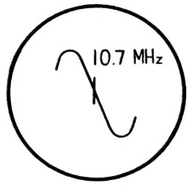


Fig. 8

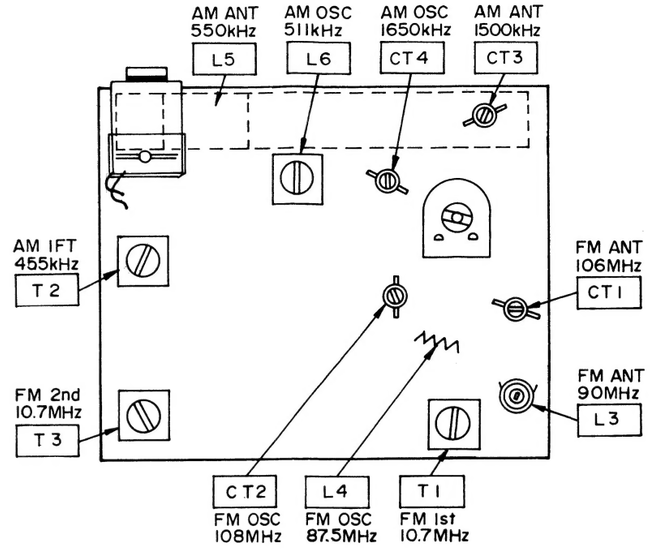


Fig. 9

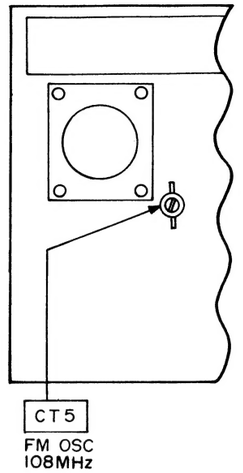


Fig. 10

CABINET PARTS LOCATION

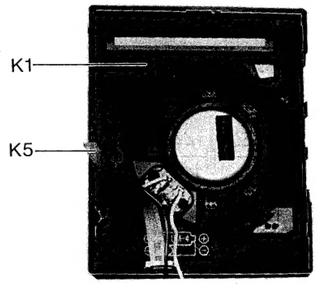


Fig. 11

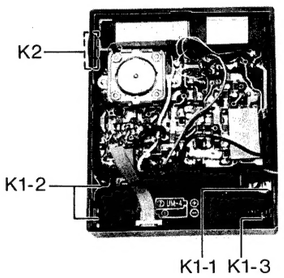


Fig. 12

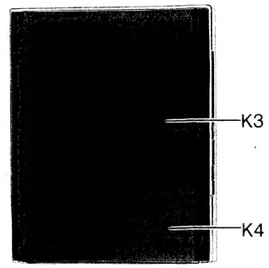


Fig. 13

ELECTRICAL PARTS LOCATION

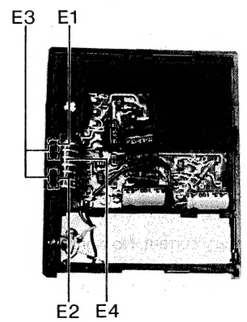


Fig. 14

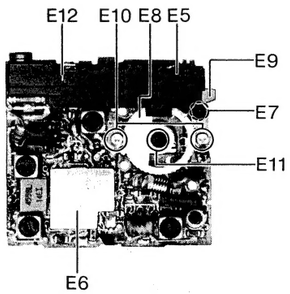


Fig. 15

SCHEMATIC DIAGRAM MODEL RF-7D

IC1 **AN7216** FM RF AMP

D4 **MA150** D. AGC

Q1 **2SC2295** FM IF AMP

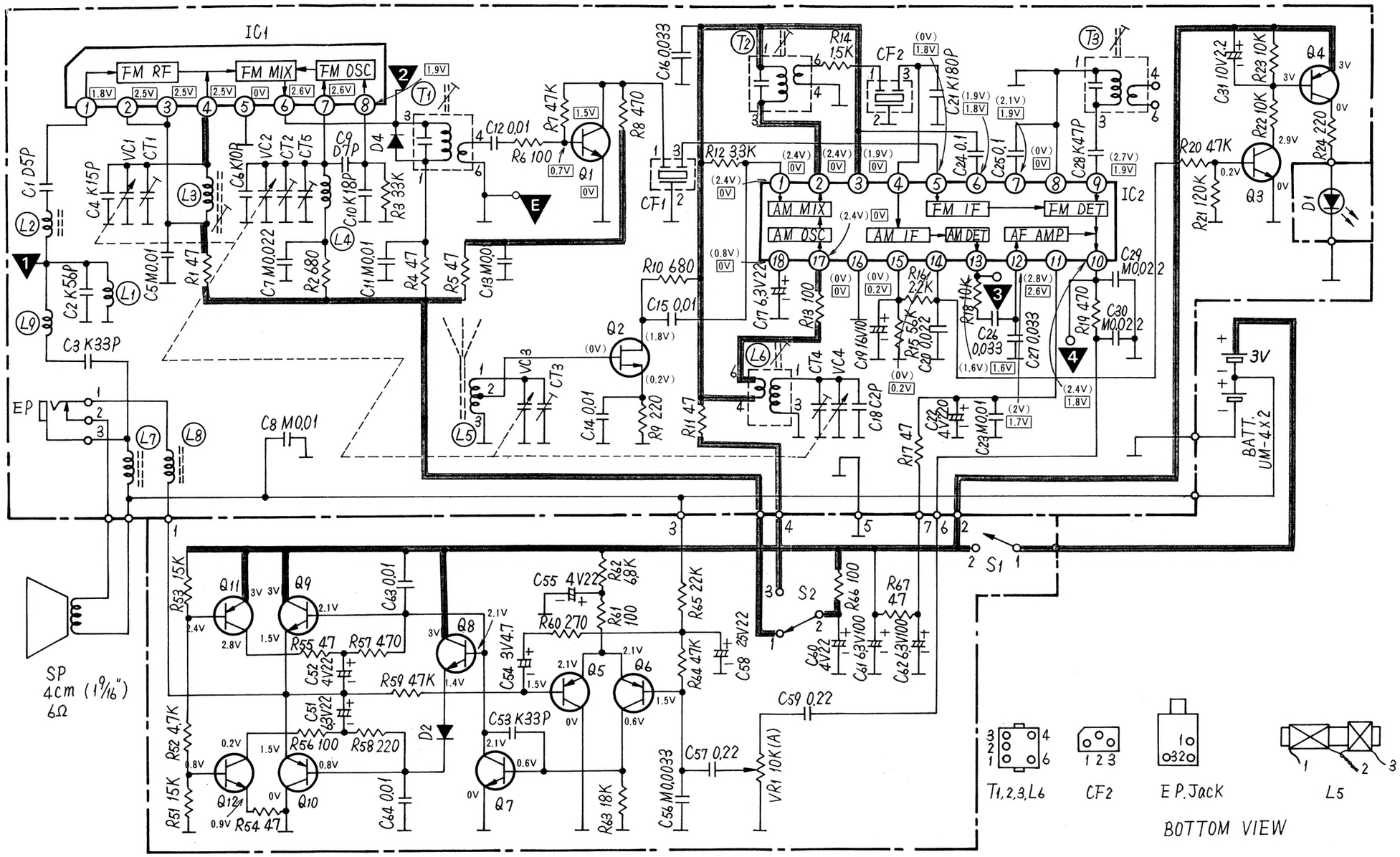
Q2 **2SK160** AM RF AMP

IC2 **AN7221** FM/AM IF AMP & AM OSC. MIX DET

Q3 **2SD601** TUNING AMP

Q4 **2SA812** TUNING DET

D1 **RVDPR2202S** TUNING IND



Q11 **2SB709** SWITCHING

Q12 **2SD601** SWITCHING

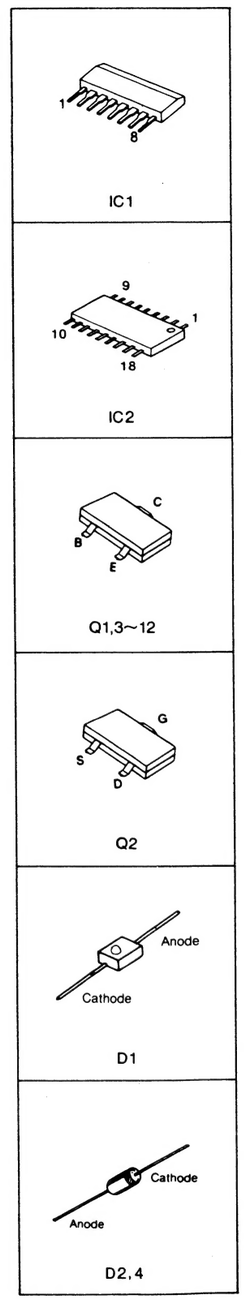
Q9 **2SD596** POWER AMP

Q10 **2SB624** POWER AMP

D2 **MA27B1** AOC

Q7,8 **2SD601** AF AMP

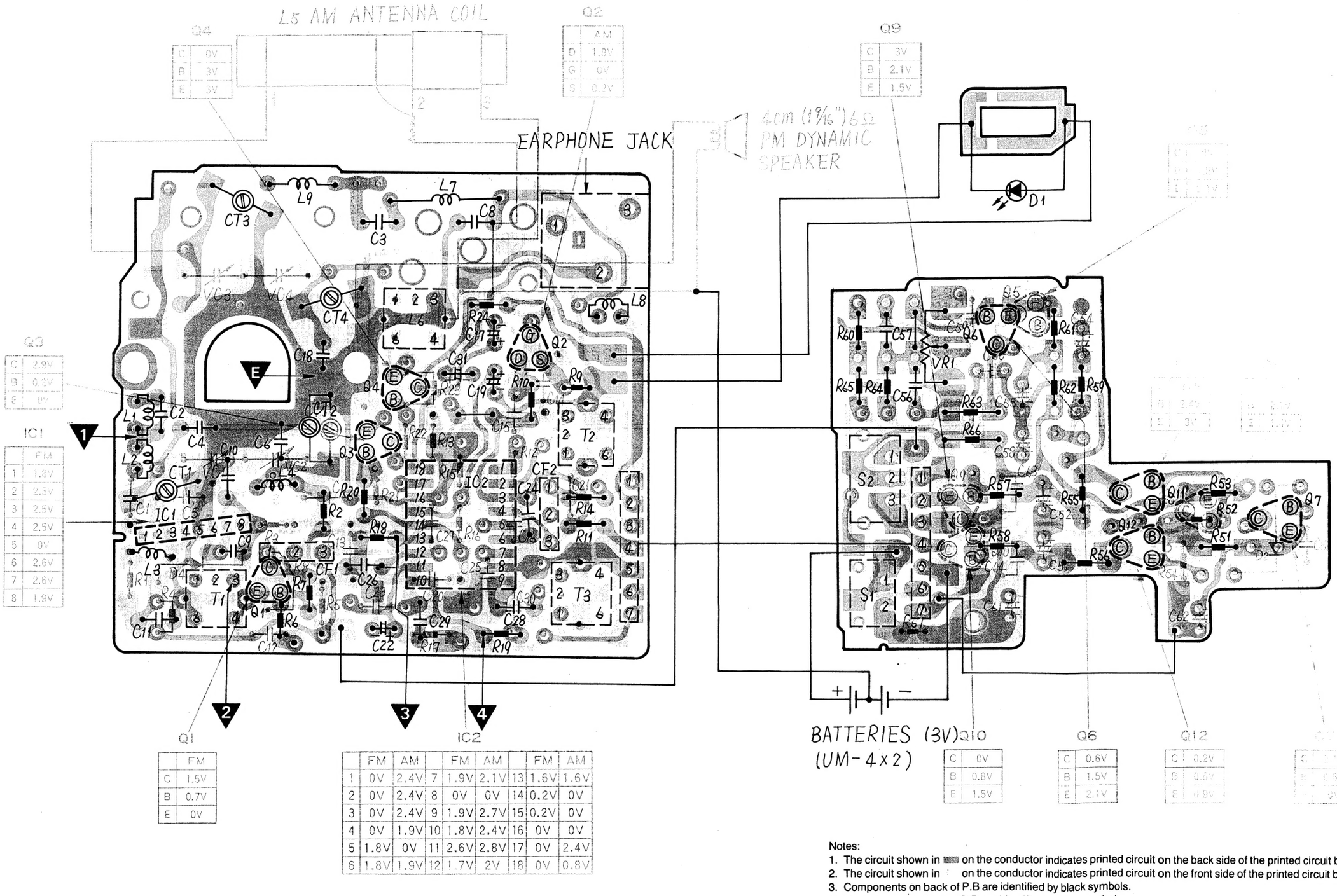
Q5,6 **2SB709** AF AMP



Notes:

1. S1: Power switch in "OFF" position.
2. S2: Band switch in "FM" position. (① . . . FM, ③ . . . AM)
3. DC voltage measurements are taken with electronic voltmeter from negative terminal of battery.
   [ ] . . . FM position, ( ) . . . AM position.
4. Battery current, No signal . . . . . 23 mA
   Maximum . . . . . 150 mA
5. VR1 . . . Volume Control.

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RF-7D



Q4

C	0V
B	3V
E	3V

Q2

	AM
D	1.8V
G	0V
S	0.2V

Q9

C	3V
B	2.1V
E	1.5V

Q3

C	2.9V
B	0.2V
E	0V

IC1

	FM
1	1.8V
2	2.5V
3	2.5V
4	2.5V
5	0V
6	2.6V
7	2.6V
8	1.9V

Q1

	FM
C	1.5V
B	0.7V
E	0V

IC2

	FM	AM		FM	AM		FM	AM
1	0V	2.4V	7	1.9V	2.1V	13	1.6V	1.6V
2	0V	2.4V	8	0V	0V	14	0.2V	0V
3	0V	2.4V	9	1.9V	2.7V	15	0.2V	0V
4	0V	1.9V	10	1.8V	2.4V	16	0V	0V
5	1.8V	0V	11	2.6V	2.8V	17	0V	2.4V
6	1.8V	1.9V	12	1.7V	2V	18	0V	0.8V

Q10

C	0V
B	0.8V
E	1.5V

Q6

C	0.6V
B	1.5V
E	2.1V

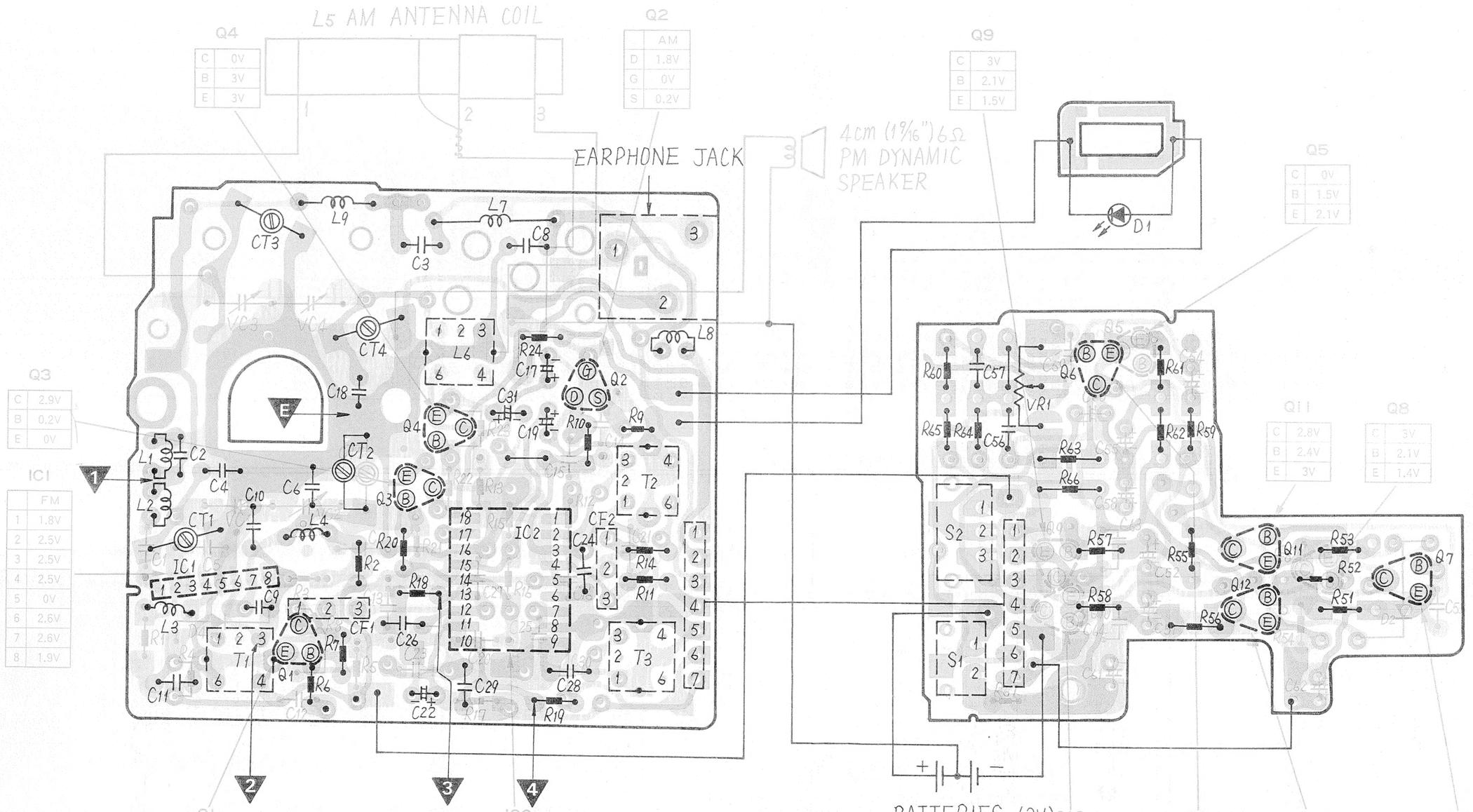
Q12

C	0.2V
B	0.5V
E	0.9V

Notes:

1. The circuit shown in ▬ on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in on the conductor indicates printed circuit on the front side of the printed circuit board.
3. Components on back of P.B are identified by black symbols.
4. Components on front of P.B are identified by blue symbols.
5. The symbols (●) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RF-7D



Notes:

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2. The circuit shown in ▒ on the conductor indicates printed circuit on the front side of the printed circuit board.
3. Components on back of P.B are identified by black symbols.
4. Components on front of P.B are identified by blue symbols.
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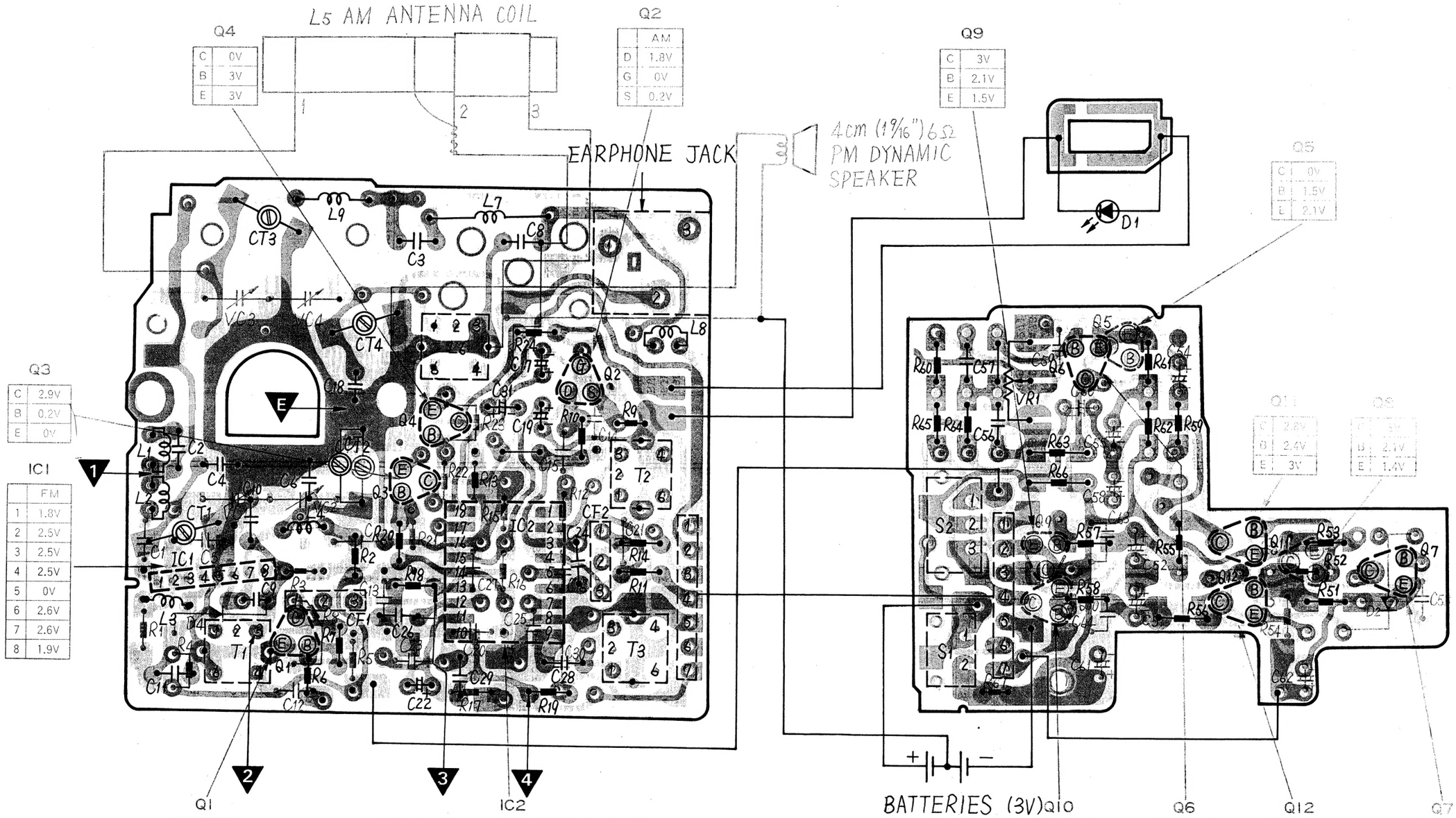
CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM MODEL RF-7D



Q4

C	0V
B	3V
E	3V

Q2

	AM
D	1.8V
G	0V
S	0.2V

Q9

C	3V
B	2.1V
E	1.5V

Q5

C	0V
B	1.5V
E	2.1V

Q3

C	2.9V
B	0.2V
E	0V

IC1

	FM
1	1.8V
2	2.5V
3	2.5V
4	2.5V
5	0V
6	2.6V
7	2.6V
8	1.9V

Q1

	FM
C	1.5V
B	0.7V
E	0V

IC2

	FM	AM		FM	AM		FM	AM
1	0V	2.4V	7	1.9V	2.1V	13	1.6V	1.6V
2	0V	2.4V	8	0V	0V	14	0.2V	0V
3	0V	2.4V	9	1.9V	2.7V	15	0.2V	0V
4	0V	1.9V	10	1.8V	2.4V	16	0V	0V
5	1.8V	0V	11	2.6V	2.8V	17	0V	2.4V
6	1.8V	1.9V	12	1.7V	2V	18	0V	0.8V

Q10

C	0V
B	0.8V
E	1.5V

Q6

C	0.6V
B	1.5V
E	2.1V

Q12

C	0.2V
B	0.8V
E	0.9V

Q7

C	2.1V
B	0.6V
E	0V

Notes:
1. The circuit shown in ▬ on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in ▭ on the conductor indicates printed circuit on the front side of the printed circuit board.
3. Components on back of P.B are identified by black symbols.
4. Components on front of P.B are identified by blue symbols.
5. The symbols (◉) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.

■REPLACEMENT PARTS LIST····· Model RF-7D

(RD83022063C2)

NOTES: 1. Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		INTEGRATED CIRCUITS, TRANSISTORS AND DIODES		
IC1	AN7216	IC	1	
IC2	AN7221	IC	1	
Q1	2SC2295B	Transistor (Si)	1	
Q2	2SK160K5	Transistor (Si)	1	
Q3	2SD601Q	Transistor (Si)	1	
Q4	2SA812M5	Transistor (Ge)	1	
Q5	2SB709S	Transistor (Ge)	1	S
Q6	2SB709S	Transistor (Ge)	1	S
Q7	2SD601S	Transistor (Si)	1	S
Q8	2SD601Q	Transistor (Si)	1	
Q9	2SD596DV3	Transistor (Si)	1	
Q10	2SB624BV3	Transistor (Ge)	1	
Q11	2SB709R	Transistor (Ge)	1	S
Q12	2SD601S	Transistor (Si)	1	S
D1	RVDPR2202S	Diode (Si)	1	
D2	MA27B1	Diode (Si)	1	S
D4	MA161	Diode (Si)	1	S
		COILS AND TRANSFORMERS		
L2	RLQZJR47M	Coil, Choke	1	
L3	RLO4N125	Coil, FM Tuning	1	
L4	RLO4N162	Coil, FM Oscillator	1	
L5	RLF2Y15	Coil, AM Antenna	1	
L6	RLO2A3	Coil, AM Oscillator	1	
L7	RLQZA100K	Coil, Choke	1	
L8	RLQZ22G3	Coil, Choke	1	
T1	RLI4A19	IFT, FM	1	
T2	RLI2A15	IFT, AM	1	
T3	RLI4A19	IFT, FM	1	
		VARIABLE RESISTOR		
VR1	EVLAPAA02A14	Variable Resistor, 10kΩ (A)	1	
		VARIABLE CAPACITORS		
VC1~4	RCV4LC3F1NZS	Tuning Capacitor	1	
CT1~5	RCVTSW3H	Trimmer Capacitor	5	
		CERAMIC FILTERS		
CF1	RVF107NAZ	Ceramic Filter	1	
CF2	RVFCFMS455B	Ceramic Filter	1	
		SPEAKER		
	EAS4P102SK	Speaker, 4cm (1-1/2"), 6Ω	1	
		SWITCHES		
S1	ESD14163	Switch, Power	1	
S2	ESD14164	Switch, Band	1	
		JACK		
J1	RJJ1C3Y	Jack, Earphone & Antenna	1	
		RESISTORS (Value is in OHMS)		
R1	RRD18XK470	47 1/8W Chip	1	
R2	RRD18XK681	680 " "	1	
R3	RRD18XK333	33 k " "	1	
R4	RRD18XK470	47 " "	1	
R5	RRD18XK470	47 " "	1	
R6	RRD18XK101	100 " "	1	
R7	RRD18XK473	47 k " "	1	
R8	RRD18XK471	470 " "	1	
R9	RRD18XK221	220 " "	1	
R10	RRD18XK681	680 " "	1	
R11	RRD18XK470	47 " "	1	
R12	RRD18XK332	3.3 k " "	1	
R13	RRD18XK101	100 " "	1	
R14	RRD18XK152	1.5 k " "	1	
R15	RRD18XK563	56 k " "	1	
R16	RRD18XK222	2.2 k " "	1	
R17	RRD18XK470	47 " "	1	
R18	RRD18XK103	10 k " "	1	
R19	RRD18XK471	470 " "	1	
R20	RRD18XK473	47 k " "	1	
R21	RRD18XJ124	120 k " "	1	
R22	RRD18XK103	10 k " "	1	
R23	RRD18XK103	10 k " "	1	
R24	RRD18XK221	220 " "	1	
R51	RRD18XK153	15 k " "	1	
R52	RRD18XK472	4.7 k " "	1	
R53	RRD18XK153	15 k " "	1	
R54	RRD18XK470	47 " "	1	
R55	RRD18XK470	47 " "	1	
R56	ERD10TJ101	100 " "	1	
R57	RRD18XK471	470 " "	1	
R58	RRD18XK221	220 " "	1	
R59	RRD18XK473	47 k " "	1	
R60	RRD18XK271	270 " "	1	
R61	RRD18XK101	100 " "	1	
R62	RRD18XK682	6.8 k " "	1	
R63	RRD18XK183	18 k " "	1	
R64	RRD18XK473	47 k " "	1	
R65	RRD18XK223	22 k " "	1	
R66	RRD18XK101	100 " "	1	
R67	RRD18XK470	47 " "	1	
		CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS)		
C1	ECUX1H050DC	5 P 50V Chip	1	
C2	ECUX1H560KC	56 P " "	1	
C3	ECUX1H330KC	33 P " "	1	
C4	ECUX1H150KC	15 P " "	1	
C5	ECUX1H103MD	0.01 50V Chip	1	
C6	ECUX1H100KC	10 P " "	1	
C7	ECUX1H223MD	0.022 " "	1	
C8	ECUX1H103MD	0.01 " "	1	
C9	ECUX1H070DC	7 P " "	1	
C10	ECUX1H180KC	18 P " "	1	
C11	ECUX1H103MD	0.01 " "	1	
C12	ECUX1H103ZF	0.01 " "	1	
C13	ECUX1H103MD	0.01 " "	1	
C14	ECUX1H103ZF	0.01 " "	1	
C15	ECUX1H103ZF	0.01 " "	1	
C16	ECUX1H333ZF	0.033 " "	1	
C17	ECEA1ES220	22 25V Electrolytic	1	S
C18	ECUX1H020CC	2 P 50V Chip	1	
C19	ECEA1HS100	10 " Electrolytic	1	S
C20	ECUX1H223ZF	0.022 " Chip	1	
C21	ECUX1H181KD	180 P " "	1	
C22	ECEA0GK221	220 4V Electrolytic	1	S
C23	ECUX1H103MD	0.01 50V Chip	1	
C24	ECUX1H104MD	0.1 " "	1	
C25	ECUX1H104MD	0.1 " "	1	
C26	ECUX1H333ZF	0.033 " "	1	
C27	ECUX1H333ZF	0.033 " "	1	
C28	ECUX1H470KC	47 P " "	1	
C29	ECUX1H223MD	0.022 " "	1	
C30	ECUX1H223MD	0.022 " "	1	
C31	ECSF1AM225	2.2 10V Electrolytic	1	
C51	ECEA1ES220	22 25V "	1	S
C52	ECSF0GE226	22 4V "	1	S
C53	ECUX1H330KC	33 P 50V Chip	1	
C54	ECSF0FM475	4.7 6.3V Electrolytic	1	
C55	ECSF0GE226	22 4V "	1	S
C56	ECUX1H332MD	0.0033 50V Chip	1	
C57	ECUX1E224ZF	0.22 25V "	1	
C58	ECEA1ES220	22 " Electrolytic	1	S
C59	ECUX1E224ZF	0.22 50V Chip	1	
C60	ECSF0JE226	22 4V Electrolytic	1	S
C61	ECEA1AS101	100 10V "	1	S
C62	ECEA1AS101	100 " "	1	S
C63	ECUX1H103ZF	0.01 50V Chip	1	
C64	ECUX1H103ZF	0.01 " "	1	
		CABINET PARTS		
K1	RYMF7DXGZ	Front Cabinet Ass'y	1	
K1-1	RJC944Z	Terminal, Battery + Side	1	
K1-2	RJC945Z	Terminal, Battery + - Side	1	
K1-3	RJC947Z	Spring, Battery - Side	1	
K2	RYTF7DXGZ	Tuning Knob Ass'y	1	
K3	RKF609V	Cabinet Cover	1	
K4	RKK231Z	Battery Cover	1	
K5	RHS27Z	Ribbon	1	
		ELECTRICAL PARTS		
E1	RUV640Y	Cover, Switch	1	
E2	RUV647Y	Cover, Switch	1	
E3	RBD147Y	Knob, Band Power	2	
E4	RJE119Z	Lead Wire	1	
E5	RUA510Z	Dial Chassis	1	
E6	RMC798Z	Shield Cover	1	
E7	XTN17+3JFZ	Screw	2	
E8	RDG5701Z	Drum, Dial	1	
E9	RDG5808Z	Shaft, Tuning	1	
E10	XSHR2+2FN	Screw, Circuit Board M'tg	2	
E11	XSN17+2FZ	Screw, Drum M'tg	1	
E12	RZPF007DN	Pointer Ass'y	1	
		ACCESSORIES		
	RSA209Z	FM Antenna Lead	1	
	XEH1C2-D	Earphone	1	
	RQD198Z	Case	1	
		PACKING MATERIALS		
	RPK1517Z	Gift Box	1	
	RPK1518Z	Display Stand	1	
	RPN3924Z	Pad	1	
	RPE479Z	Cover	2	
		PRINTED MATERIAL		
	RQX4115Z	Instruction Book	1	

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